

21 May 1951

MEMORANDUM FOR: Special Assistant to Deputy Director (Admin.)  
FROM: Chief, Program Coordination Div./Medical Office  
SUBJECT: Medical Support to the Over All Plan of Evacuation  
in the Event of an Atomic Bomb Disaster

The Medical Office of this Agency offers the following summary of its plans for medical support in the event of an atomic bomb disaster which would involve a part or all of Agency personnel, equipment and structures in Washington, D. C.

1. The spectrum of medical support can be viewed from a range of total reliance on Civilian Defense measures to a total autonomy of existence in the event of such a disaster. A position taken by this office that would embrace either end of the spectrum would result in (a) a total disregard for the sensitive nature of the Agency or (b) a complete reduplication of expensive equipment and highly trained personnel that in all probability will have been secured by Civilian Defense. It is believed that an acceptable medium has been reached between these two opposite points.

2. Medical support has been phased to render service to:

- a. the five peripheral collecting points
- b. an intermediary decontamination point
- c. the refuge headquarters

a. Collecting Points

It is assumed that the five peripheral collecting points on or about the periphery of Washington and so designated by the Deputy Director (Admin.), will receive its medical support in the following manner:

1. Each of the collecting points will be manned by five-man teams of technicians or persons who are members of this Agency and specifically trained in the management of radiation equipment in addition to their knowledge of first aid management of casualties.

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2. If each collecting point is a fixed location, three of the five technicians will act as members of a battalion aid station. Their duties will be flexible and subject to change depending upon the severity of the explosion, their location with respect to the explosion, the number of casualties admitted to the collecting points and the availability of supervision by medical officers.

3. The Medical Office will not be able to furnish medical officers to all five of the collecting points provided that they are still in operation, but one medical officer and a health physicist could be moved from collecting point to collecting point by any method of transportation that is available.

4. The nucleus of these five collecting points should be a twenty-five bed hospital which may be set up in a tent in the disaster area to be used only if Civilian Defense facilities are not adequately supplied to meet the emergency.

5. The patients in each collecting point will be managed by the three technicians assigned thereto.

6. Two other technicians will work out of these collecting points in a station wagon or other mobile unit equipped with space to transport at least two patients, radiation detection equipment (list in master copy), medical and surgical equipment (list in master copy), and a system of communication with the decontamination area and the refuge headquarters via a vocal communication apparatus.

7. Agency personnel casualties may be evacuated to the collecting points either (a) by litter or (b) by station wagon. However, only the most urgent cases should have priority for transportation by the station wagon. All equipment placed in the station wagon with the exception of the communication equipment may be removed therefrom and operated on the ground.

8. It is not anticipated by this department that the health physics aspects of this evacuation of personnel would not necessarily be turned over to Civilian Defense authorities. Furthermore, it is anticipated that the monitoring of classified material of this Agency will under no circumstances be turned over to Civilian Defense authorities for a decision of decontamination and salvage or destruction.

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9. This compact unit can work in contaminated areas for whatever length of time the health physicist and medical officer determine is within the realm of safety. When the technicians reach their daily tolerance dose level they could be exchanged for two other technicians working back in the collecting point.

10. These collecting points may be set up in tents or available buildings on the periphery of the area of destruction and serve two purposes.

(a) The emergency care and treatment of Agency casualties from the atomic blast.

(b) Screening of personnel and equipment before it is sent to the decontamination center or to the refuge headquarters.

b. Decontamination Center

Two plans are herein offered for the management of this station, Plan K and Plan L.

Plan K is slightly more complete and calls for a considerable increase in personnel, equipment and buildings. Plan L is less costly in personnel and equipment, and it is felt by the Medical Office that it could serve the evacuation problem almost as efficiently.

Plan K

The individual design and calibration of instruments designed to monitor waste water, smoke from the incinerator, valuable equipment, vital records, and specific requirements for monitoring of the decontamination shower room should be under the direct supervision of the health physicist. Many problems will arise because of the unique nature of this work and because this office lacks the advise of a health physicist, it is anticipated that many points will be overlooked with respect to this unusual radiation monitoring problem. However, the basic radiation equipment contained in the master list can be redesigned and further instruments added when and if a health physicist is added to this Staff.

The medical officer and the health physicist from the refuge headquarters can visit the decontamination site as part of their rounds of the collecting points. Attached to the decontamination center on a permanent basis should be six technicians who are trained in the management of contaminated material. These technicians would not require the specialized training of those attached to the refuge headquarters, but should be specifically trained to supervise the

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personnel working in the sewage disposal plant, the laundry, the crematory and to be sufficiently versed with the problem to recognize and correct any breaks in radiological techniques. These breaks in technique on the part of personnel working in these areas, as well as problems of disposal, etc., should be reported to the health physicist at the earliest possible moment.

It is estimated that a total of 100 persons working in the laundry, decontamination room, crematory and sewage disposal plant would be adequate. The problem of workers reaching their daily tolerance dose while working with exposure to radioactive isotopes can best be solved by working in shifts. The length of their shifts can best be determined by the health physicist and the medical officer. When the daily dosage or exposure with certain radioactive isotopes, has been computed, and if this total dosage reaches a predetermined level, he may be relieved of his duties for a period of twenty-four hours.

The medical and radiation equipment in this decontamination center will serve to support itself as well as supporting the five peripheral collecting points in case of an unpredicted loss of personnel and equipment at any of these points.

It would be appreciated by this office if consultation could be obtained from any other office in the Agency for the construction of:

1. a decontamination shower room for personnel and equipment.
2. a sewage disposal plant for contaminated waste.
3. the construction of a laundry for decontamination of clothing.
4. the construction of a crematory for the disposal of items which are considered expendable.

The decontamination shower room should consist of no less than eight consecutive stand-up showers, connected so that a person may enter at one end, and pass through the various showers with eight changes of soap, and emerge at the other end for a thorough radiation check. He will deposit clothing at the point of entrance and this will be surveyed to determine whether the clothing should be sent to the crematory or to the laundry.

Following this procedure he reports to the laboratory for a base line blood picture and a base line urinalysis. This data could be tagged on his card which carries the date, name, address, radiation dose, location with respect to ground "0", medication given, etc.

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This decontamination shower room should be wide enough to permit passage of a litter in the event that the patient cannot decontaminate himself. Upon leaving the shower room the patient or individual is surveyed by a member of the monitor team and is then given a new set of clothes, etc.

In the case casualties are contaminated, splints, dressings and gear should be removed upon entering the shower room and a new issue would be released at the point of exit.

The disposal of water in this shower room is very important. The drains should be so constructed so that contaminated waste may be properly monitored to ascertain their potency. Workers will set aside contaminated waste in properly labeled containers (oil drums, etc.) and limit the amount of radioactive material they pour down the drains to empty into creek X that in turn empties into Y body of water.

Water from the showers first passes into the hold up tanks where automatic equipment collects a continuous sample for radioactive assay.

If tests show long-lived radioactivity, the contents of the hold-up tanks is pumped into tanks for permanent storage; when the sample falls within set limits, the water is released from the hold-up tanks into the sewer system at a given rate of flow. The water should be tested at least twice again before it is dumped into the uncontrolled drainage system of creek X.

(1) At a pool where sewage is subjected to a standard bacterial treatment which precipitates out some of the radioactive contamination.

(2) Sand filter beds which will catch still another fraction of contamination.

The water is again monitored, chlorinated and finally dumped into creek X.

The term crematory is herein used to include the disposal by fire of expendable equipment which is not considered suitable to dispose of by other methods.

This building should be of concrete construction with one oven similar to those in operation in conventional crematories.

The reason for this size is that large bulky expendable material may be burned in large quantities.

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The stack gasses from these crematories must be monitored before they can be distributed into the atmosphere. These operations would necessarily be coordinated with meteorological conditions. For example when weather conditions would cause radioactive materials to be deposited on the surrounding countryside, operations must be discontinued in the crematory.

The quantity of these escaping gasses containing radioactive particles can be drastically reduced by filtering the gasses and washing them (further research in this field is under way at Hanford and Oakridge, and a number of commercial firms.) In addition to washing the gasses the amount of aerial contamination can be drastically reduced by longer aging of contaminated equipment.

The ashes from the crematory must be buried in lead containers and properly labeled because of their radioactive contents.

The decontamination shower room could be used for the second wave of contaminated safes vital equipment and records. In some instances wet sand blasting devices must be used on file cabinets; in some instances chemical decontamination is effective; in other cases decontamination by a blow torch must be used.

The water and chemical waste in this operation would be handled as in the aforementioned paragraphs.

The infirmary would be confined to one room comprised of six beds. It is not anticipated that this secondary station would be used for burns, trauma, etc. However, it is felt that some floor space measuring about 260 square feet could be used for the treatment of secondary radiation sickness until the patient can be transferred to civilian care. Located in this area should be a blood bank to supply only in the case of an emergency radiation sickness at the decontamination center and to serve as a distributing center for whole blood and plasma for the five collecting points.

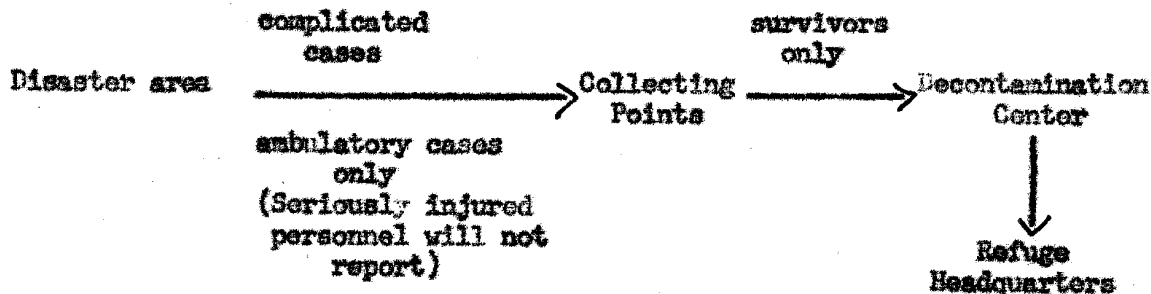
The laboratory services offered in the operation of the decontamination point, from the standpoint of routine blood and urinalysis be sufficiently limited to satisfy only the bare essentials of service, consisting of a microscope, blood counting equipment and a urinalysis system. This type of laboratory could be best handled by a trained technician.

The laundry should be supplied with standard laundry equipment for washing clothes of workers in the area and should have proper monitoring equipment to survey the articles of clothing, etc., before and after cleaning. The sewage disposal problem here would be the same as described under the description of the decontamination shower room.

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Plan L

In this plan a total of 10 nonskilled workers could work in a decontamination shower room as previously described in Plan K, only ambulatory survivors would pass through this point on to the refuge headquarters as outlined in the following chart. There would be no laundry, crematory or infirmary facilities at this point, only a large open space where safes with vital records could be placed under a military guard and allow them to undergo normal radioactive decay before they would be sent to the refuge headquarters. The length of this decay problem would be entirely dependent upon the radioactive isotopes involved and it is anticipated that most of these will be short half-life isotopes.



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In the consideration of a site as a possible decontamination center, from a health physics viewpoint, there are several features which must be considered.

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|----|---|
| a. | Location with respect to present headquarters |
| b. | " " " " refuge "                              |
| c. | " " " " available highways                    |
| d. | " " " " airports                              |
| e. | " " " " railroads                             |
| f. | " " " " water supply                          |
| g. | " " " " sewage disposal                       |
| h. | " " " " geological strata                     |
| i. | " " " " distance from curiosity seekers       |

Such an area called Area D halfway between present headquarters and the refuge headquarters is ideally located with respect to the aforementioned points. Nature animals in area D are cattle, rabbits, foxes, dogs and cats.

If Plan K is adopted, 100 nonskilled workers and 6 trained medical technicians will be employed at the decontamination center. If Plan L is adopted 10 nonskilled workers will be employed.

Proposed T/O for entire medical support program:

Refuge  
Headquarters  
  
Medical Officer  
  
Health Physicist

	Plan L		Plan K	
	Decontamination Center		Decontamination Center	
	10 unskilled workers		100 unskilled workers 6 medical technicians	
Collecting Point	Collecting Point	Collecting Point	Collecting Point	Collecting Point
5 medical technicians	5 medical technicians	5 medical technicians	5 medical technicians	5 medical technicians

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